

**AMENDED ABSTRACT**

A video-based surgical targeting system comprises a patient-specific database comprising a plurality of 2-D images of the anatomical structure of a patient, a patient-specific 3-D computer model of said anatomical structure of said patient assembled from the 2-D images contained in said patient-specific database, at least one virtual graft or implant, means for inserting the at least one virtual graft or implant into the 2-D images contained in the patient specific database and/or into said 3-D computer model, means for generating a virtual image of the anatomical structure modeled by the patient-specific 3-D computer model, means for generating a real image of the anatomical structure of the patient, means for selectively mixing the virtual image and the real image into an output image comprising either one of said images or a composite of both images, and means for displaying the output image.